

No. 740,735.

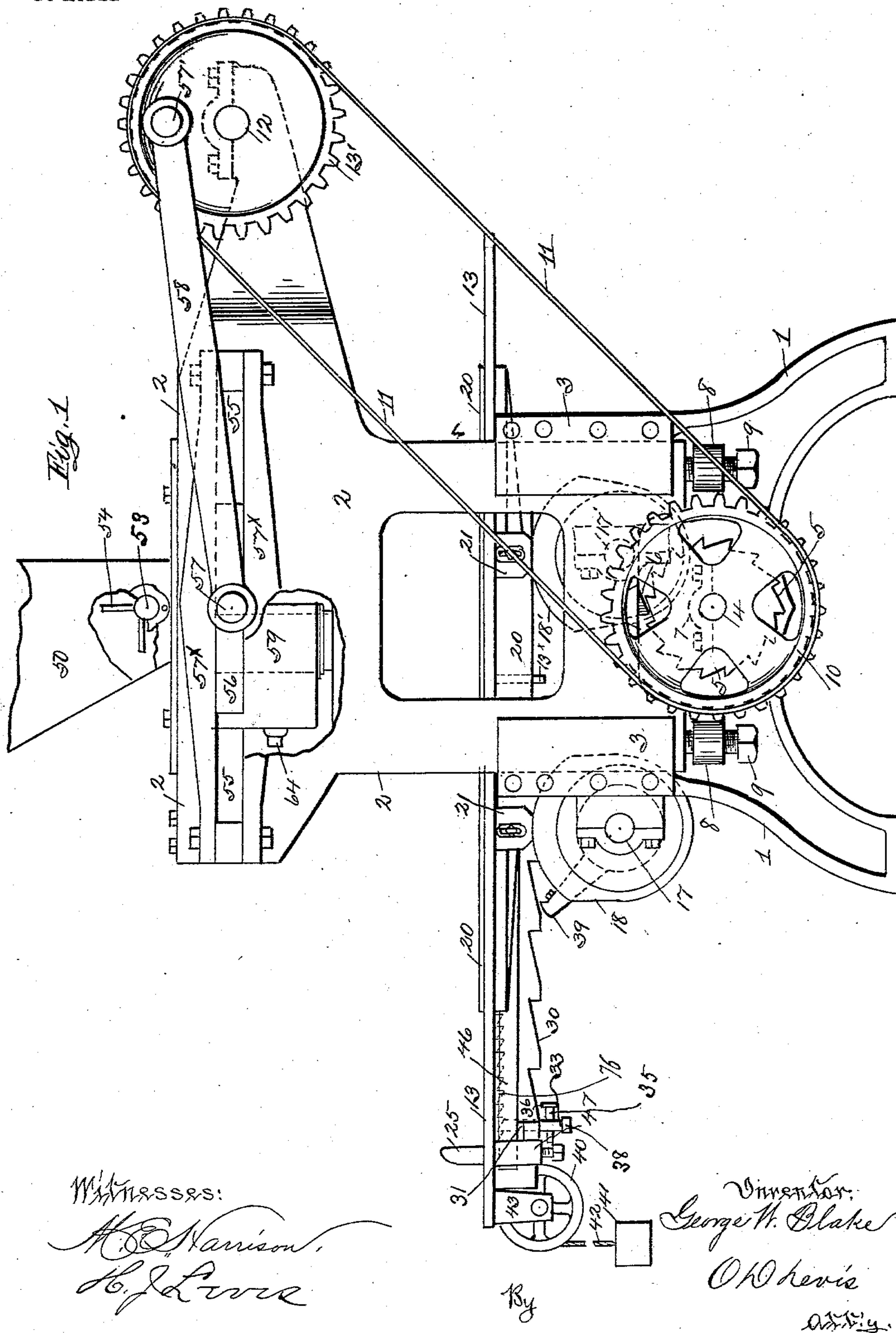
PATENTED OCT. 6, 1903.

G. W. BLAKE.
FILLING MACHINE.

APPLICATION FILED JAN. 2, 1903.

NO MODEL.

5 SHEETS—SHEET 1.



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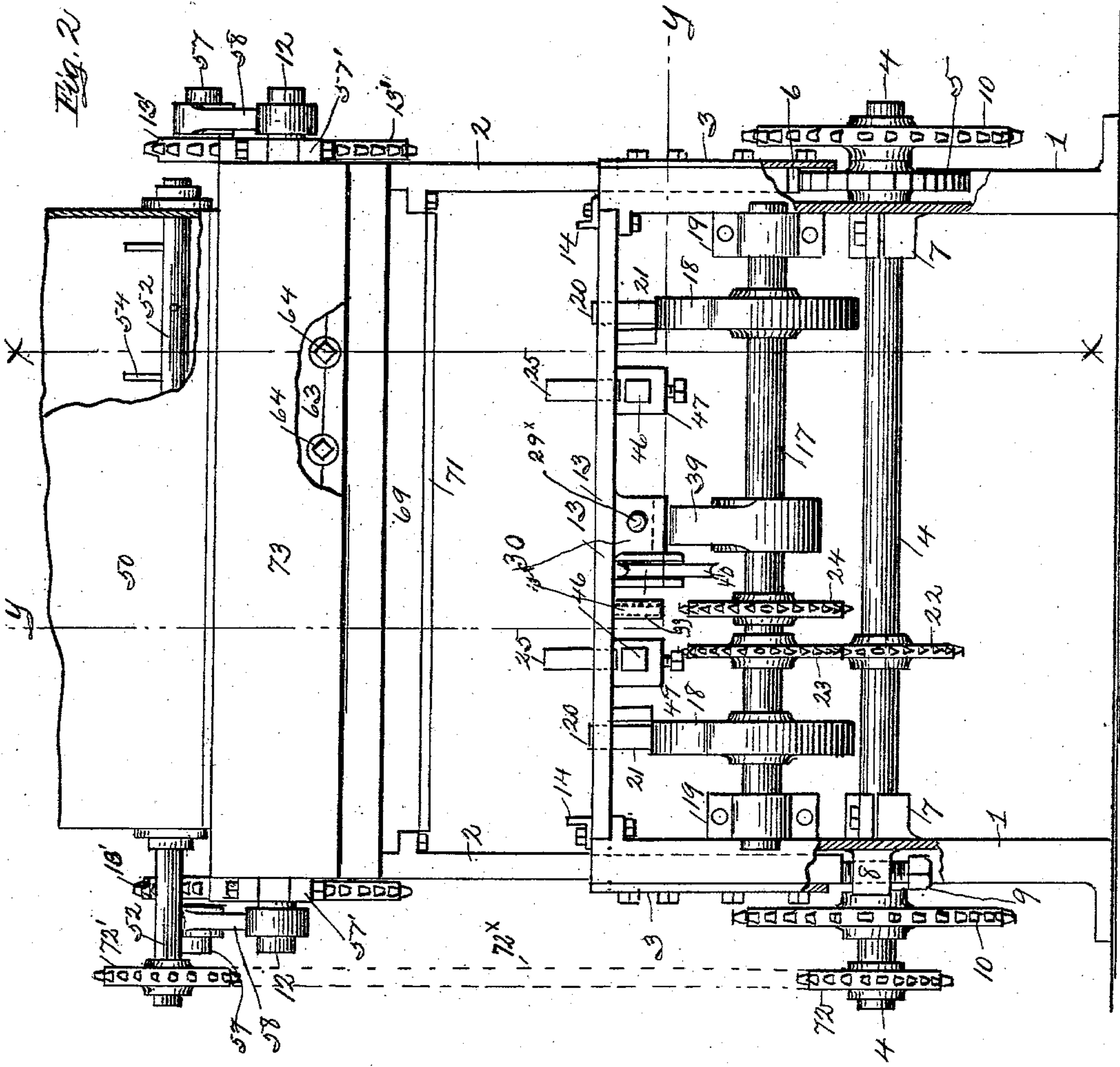
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NO MODEL.

6 SHEETS—SHEET 2.



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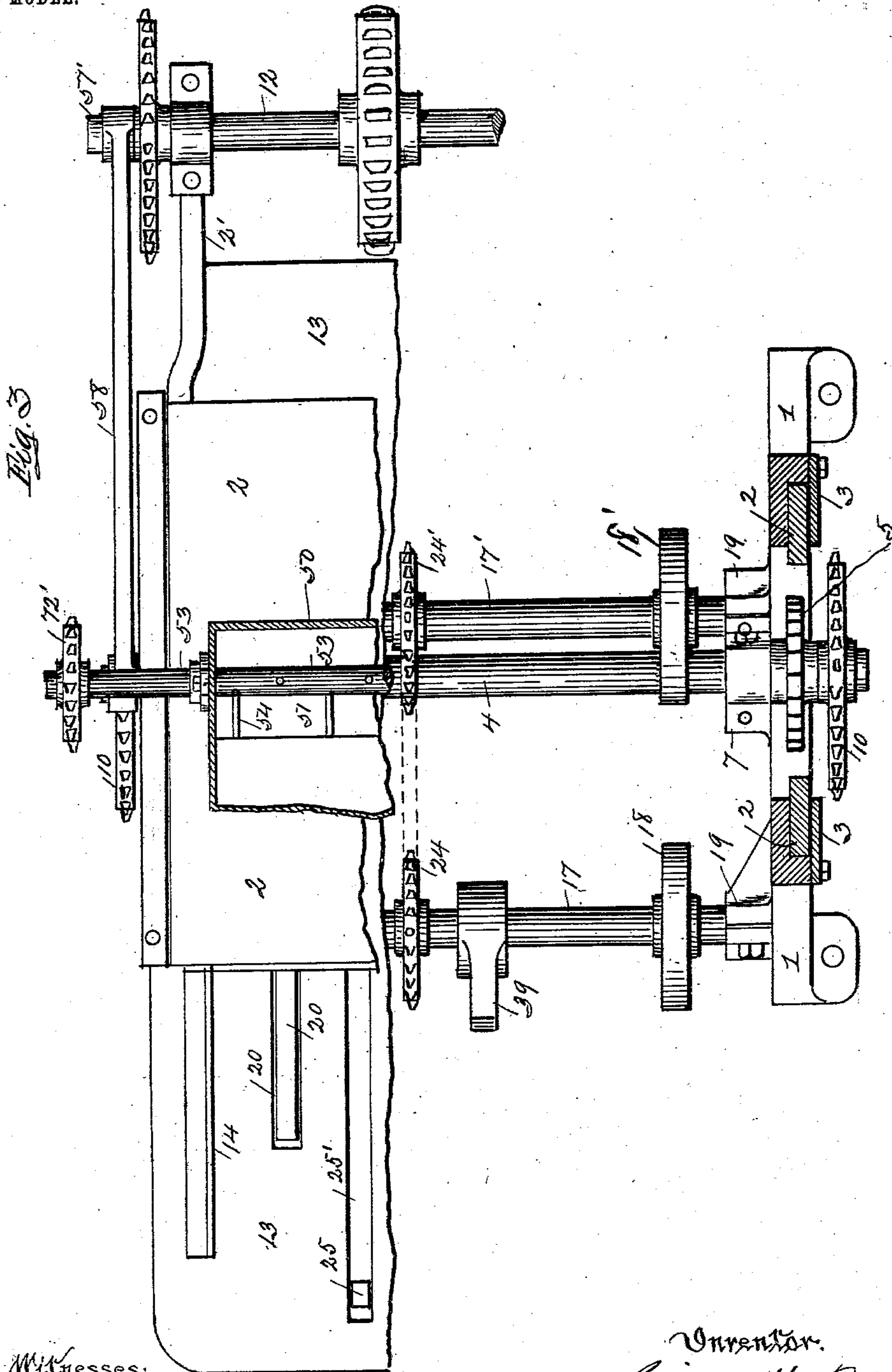
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5 SHEETS—SHEET 3.



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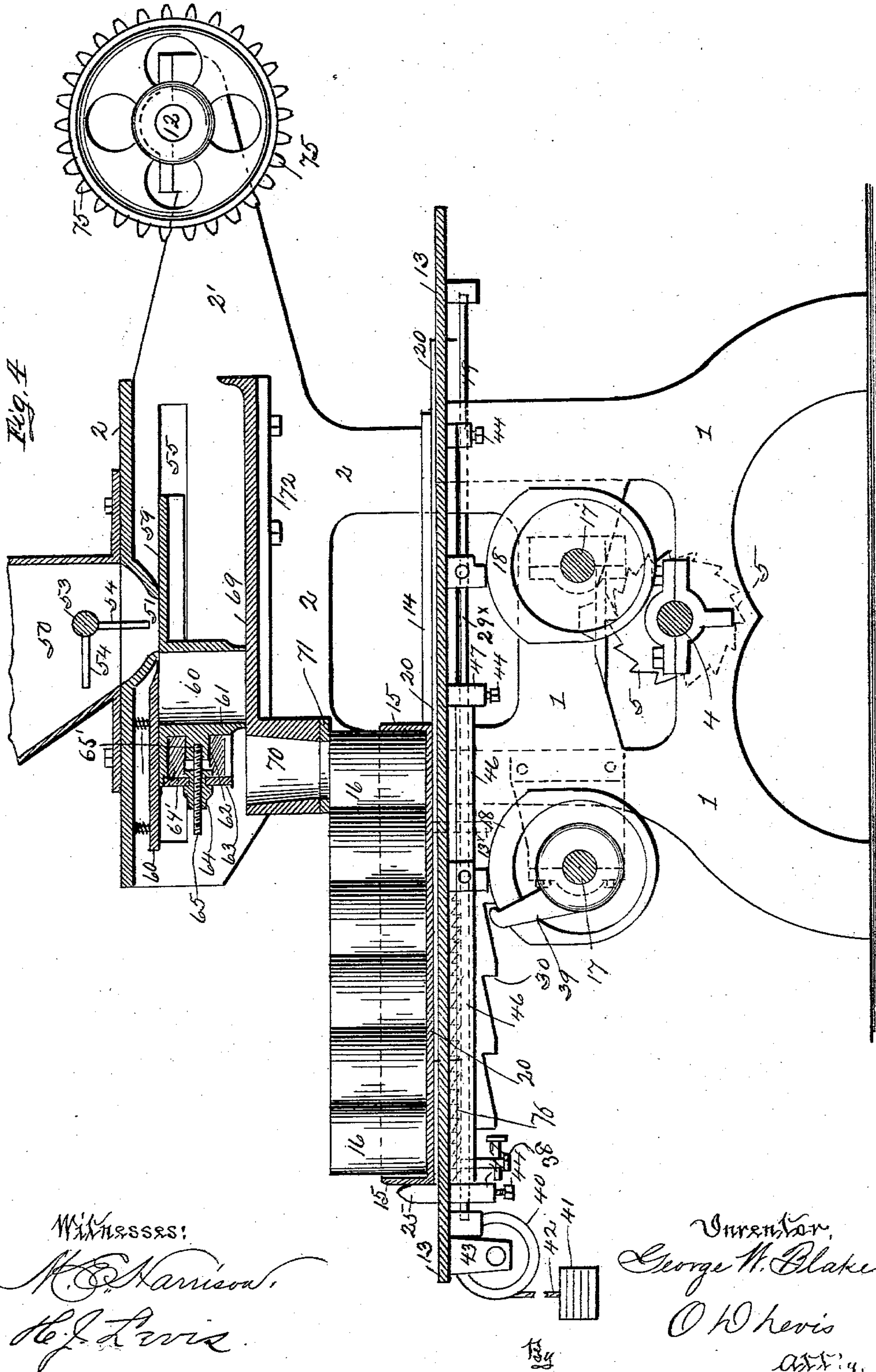
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APPLICATION FILED JAN. 2, 1903.

NO MODEL.

5 SHEETS—SHEET 4.



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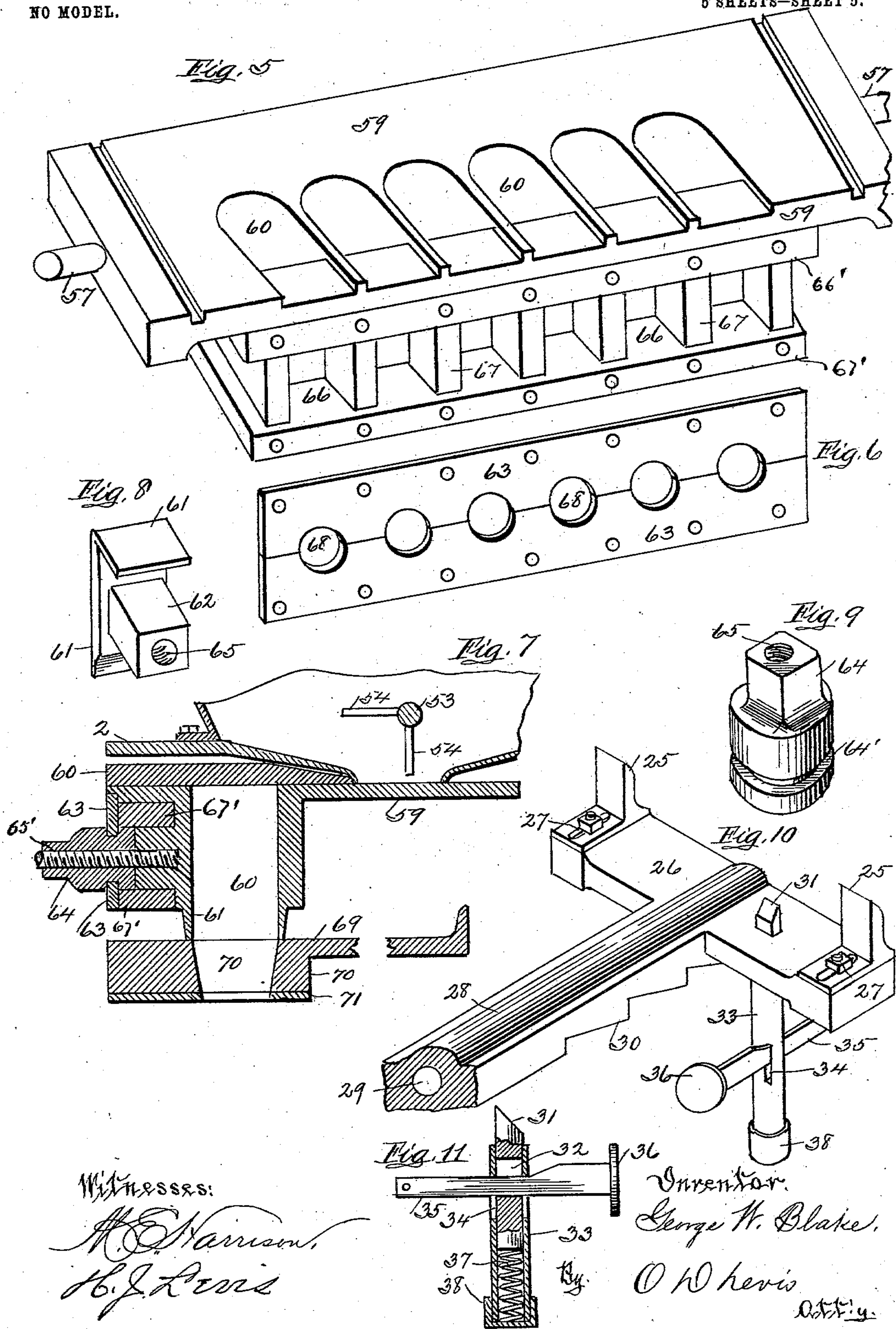
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FILLING MACHINE.

APPLICATION FILED JAN. 2, 1903.

NO MODEL.

5 SHEETS—SHEET 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE W. BLAKE, OF NATRONA, PENNSYLVANIA.

FILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 740,735, dated October 6, 1903.

Application filed January 2, 1903. Serial No. 137,394. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. BLAKE, a citizen of the United States, residing at Natrona, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Filling-Machines, of which improvement the following is a specification.

This invention relates to an improved filling-machine, and it relates more particularly to that class employed for canning caustic alkali and the like; and it consists in the certain details of construction and combination of parts, as will be fully described hereinafter.

The object of the present invention is to provide means that will prevent the material from sticking or clogging, this being prevented by the novel means of agitation.

Another object of the invention is to provide an automatic measuring and filling device that will deliver the requisite amount of material into each can or receptacle.

The invention also contemplates to provide a device of this character which will be extremely simple in construction, strong, durable, comparatively inexpensive to manufacture, and highly efficient in its use.

With the above and other objects in view I will describe the invention in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved filling-machine, the same being constructed and arranged in accordance with my invention. Fig. 2 is a front elevation of the same, a part of which is shown in section. Fig. 3 is a sectional plan view, the said section being taken on the line Y Y of Fig. 2. Fig. 4 is a vertical sectional side elevation of the machine, the section being taken on the line X X of Fig. 2. Fig. 5 is a perspective view of the measuring-table, showing the gages and front plates removed therefrom, also showing the construction of the measuring-chambers. Fig. 6 is a similar view of the divided front plate detached from the measuring-table. Fig. 7 is a side central sectional elevation of a portion of the machine, the section being taken through one of the measuring-chambers. Fig. 8 is a perspective view of one of the adjustable gages used to regulate the capacity of the measuring-chambers.

Fig. 9 is a perspective view of the nut by means of which the measuring-gages may be set in the desired position. Fig. 10 is a perspective view of a portion of the feeding frame and rack, together with the feed stop or release. Fig. 11 is a side sectional elevation of the said feed stop or release.

To put my invention into practice, and thereby provide a machine for filling cans with caustic alkali or like substance, I provide a frame 1, of a suitable size and form of construction, and mount therein, by means of guide-plate 3, a second or vibrating frame 2. Said frame is capable of a limited vertical vibrating movement, produced by toothed wheels 5, mounted on a shaft 4, being brought in contact with pieces 6, let into the said frame immediately above the said toothed wheels, the movement being regulated by large set-screws 9, operating through bosses 8, formed integral with the stationary frame 1 and engaging with the lower ends of the vibrating frame 2. These toothed wheels 5 and regulating-screws 9 are arranged at either side of the machine and the said wheels operated by means of sprocket-wheels 10, connected by chain belts 11 to similar wheels 13, mounted on a power-shaft 12, arranged in suitable bearings formed at the rear end of the vibrating frame 2 in a manner that the shaft 4 and its connected parts is given a continuous rotary movement. Mounted in bearings 19, formed on the inner side of the stationary frame 1, are two shafts 17 and 17', each of which is provided with sprocket-wheels 24 and 24', connected the one with the other by a chain belt, and the said shafts driven by sprocket connections 22 and 23 from the shaft 4 below. Each of these countershafts 17 and 17' is fitted with two cams 18 and 18', adapted to give a slight vertical movement to a set of lifting-bars 20, with which they are brought in contact during the rotary movement of the said cams. These lifting-bars 20 are arranged in a horizontal position, the one parallel to the other, and operate through slots 20', Fig. 3, formed in a table 13, rigidly fixed on the top of the stationary frame 1 in a manner that when the lift-bars 20 are in an elevated position their top surface will be slightly above the level of the said table 13. Arranged on suitably-fixed

slide-bars 46, supported in bearings 47 beneath the table 13, is a feed-frame consisting of a T-shaped casting, (see Fig. 10,) formed with a semicircular guide 28, operating in a groove formed in the under side of the table 13, and also with a bore 29, in which guide a rod 29^x, Fig. 4, is placed. The head-piece 26 is fitted with adjustable upwardly-extending lugs or feed-dogs 29, held in the desired position by bolts 27, operating through slots, and the said dogs passing through slots 25, Fig. 3, formed in the table 13, and extending in the direction of the length of the same. Formed on the under side of this above-described feed-frame is a rack 30, which in connection with a feed-arm 39, connected to the shaft 17 below, provides means for feeding the said frame 26 forward one notch at a time or a distance equal to the diameter of the can 16 operated upon. This feeding-frame is also fitted with a stop, (see Figs. 10 and 11,) consisting of a tube 33, in which is a bolt 31, the said tube being rigidly connected to the head-piece 26 and the bolt 31 projecting through the same to engage with a rack 76, formed on the under side of the table 13. This bolt is held in position by means of a key or bar 35, passing through a slot 32 in the said bolt and also through a slot 34, formed through the side walls of the tube. Beneath the bolt 31 is a spiral spring 37, held in position by a cap 38, placed on the lower end of the tube, the said spring used to keep the bolt thrust forward and in contact with the table-rack above mentioned. The bar 35 is formed with a tapered or enlarged portion and a head 36, which, when the said enlarged portion is moved forward into the slots 32 and 34, will draw the bolt 31 within the tube, thereby disengaging the said bolt from the table-rack 76. This movement of the bar 35 is brought about by the head 36 thereof coming in contact with a stationary piece 13^x beneath the table 13, Figs. 1 and 4, and located at a point at the end of the feed-frame stroke. The said frame is recovered or brought back to its original position by means of a weight 41, attached to a rope 42, the other end of which is connected to front end of the rack-bar 30. Secured at either side of the table 13 are angle-bars 14, which act as guides which support and guide the tray 15, containing the empty cans 16 during the operation of filling the same.

Arranged upon the top of the vibrating frame 2 is a hopper 50, in which a shaft 53, provided with agitators 54, is operated, the said shaft receiving its motion from sprocket-wheels 72 and 72', connected the one with the other by a chain belt 72^x. This hopper 50 is formed with an opening 51 at the base, through which the material to be canned passes into a measuring-table arranged in slides beneath. This measuring-table consists of a plate 59, (see Figs. 5, 6, 7, 8, and 9,) mounted in between guide members 57^x, placed at each side of the vibrating frame, and is operated back

and forward beneath the hopper 50 by means of connecting-rods 58, attached to integral studs 57, formed with the plate, and to crank-pins 57', attached to the sprocket-wheels 13' on the drive-shaft 12. This plate 59 is divided into a series of compartments to form measuring-chambers 60, the sides of which are at angles to the sides of the plate. These measuring-chambers 60 are open at the top, bottom, and front and separated one from the other by partitions 67, and between each partition is placed a gage formed from a single piece of metal 61, having an outwardly-projecting flange and a lug 62 with threaded socket 65' and is adapted to be moved toward or away from the rear wall of the compartments 60 by means of a nut 64, held in position by a divided plate 63, engaging a groove 64', the said plate being attached by bolts to the body of the table 59. The nut 64 is free to turn and is formed with a threaded bore, which in connection with a threaded shaft 65, operating therein and in the threaded bore 61 of the gage, affords a means of moving the latter to regulate the exact quantity of material received by the measuring-chamber. These measuring-chambers operate between an upper plate 60 and lower plate 69, the latter having openings 70, registering with the said chambers. The bottom of this last-mentioned plate 69 is fitted with a soft-rubber pad 71, against which the mouths of the cans are pressed while receiving the contents of the measuring-chambers.

In operation the material to be canned is fed into the hopper 50 and passes down through the opening 51 at the base of the same when the measuring-chambers 60 are brought beneath by the movement of the table 59, and the said material being agitated by both the vibration of the frame 2 and paddles 54 the same is prevented from packing. Each of the measuring-chambers receiving the material will be filled and by a further forward movement of the table will deposit their contents into the discharge-openings 70, formed in the plate 69.

While the above-described operation is taking place, the shafts 17 and 17' being in motion, the cams 18 lift the bars 20, thereby pressing one row of cans tightly against the rubber 71 and receive the contents of the measuring-chambers above. When this has been accomplished, the bars are lowered and the feed-arm 39 engaged with one of the notches 30 to move the tray forward a distance equal to the diameter of the cans, thereby bringing the second row of empty cans in position beneath the discharge-openings to receive the contents of the measuring-chambers after they have been refilled by a back-and-forward movement of the table 59. This operation is continued until the cans are all filled, and at each step the bolt engages with the table-rack, holding the tray from back or forward movement until the head of the bar 35 is brought in contact with a stop 13^x, thus

at the rear of the machine withdrawing the said bar 35 brought against a lug or projection to release the bolt 31 to again engage with its rack.

5 Various slight modifications and changes may be made in the details of construction without departing from the spirit of the invention. Therefore, I do not confine myself to the exact construction shown and described.

10 Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A filling-machine comprising a frame, a filling-tray mounted upon said table, a vibrating hopper, a measuring-receptacle positioned 15 beneath the same, means for reciprocating said receptacle, a rack having filling-apertures, means for raising the tray, whereby the receptacle being filled may be held tightly 20 about the marginal edges of the filling-aperture, as set forth.

2. A filling-machine comprising a frame, a table, and a receptacle-carrying tray mounted upon said table, a vibrating hopper, a measuring-receptacle, and means for reciprocating 25 the same, a filling-rack underneath said measuring-receptacle, vertically-movable bars upon which said tray is mounted, shafts and cam members for raising said bars, whereby 30 the receptacles to be filled may be held tightly against the filling-rack, and means for imparting an intermittent movement to advance said tray, as set forth.

3. A filling-machine comprising a frame, a 35 table thereon, a vibrating hopper, a measuring-receptacle and means for reciprocating the same, an apertured filling-rack positioned underneath the measuring-receptacles, vertically-movable bars upon the table, 40 a receptacle-holding tray resting upon said bars, shafts and cam members thereon for raising said bars and tray whereby the receptacles to be filled are held tightly against the rack, a rack-bar underneath said tray, arms rotating 45 with one of said shafts and adapted to engage the teeth of said rack-bar to impart an intermittent movement to the tray, and means for holding the tray against rearward movement, as set forth.

50 4. A filling-machine comprising a frame, a table mounted thereon, vertically-movable bars mounted upon said table, shafts with cams mounted thereon and adapted to raise said bars, a vibrating hopper, a gage-receptacle, and means for reciprocating the same 55 underneath the hopper, an apertured filling-rack underneath the gage-receptacle, a tray mounted upon said bars, a feeding-slide and a rack-bar underneath the tray, an arm on 60 one of said shafts adapted to engage the teeth of said rack-bar to impart an intermittent

movement to the tray, teeth formed on the under surface of the table, and a spring-actuated dog designed to engage said teeth and hold the tray from rearward movement, and 65 means for releasing said dog and mechanism for returning the feed-slide to its starting position, as set forth.

5. A filling-machine comprising a frame, an adjustable and vertically-movable super- 70 structure, and means for limiting the vibratory movement thereto, a table, vertically-movable bars mounted thereon, a receptacle-holding tray mounted upon said bars, a hopper, a measuring-receptacle positioned under- 75 neath the hopper, means for reciprocating said receptacle, an apertured filling-rack positioned underneath the filling-receptacle, a rack-bar underneath the filling-tray, cam-wheels for raising said bars to hold recep- 80 tacles carried by the tray tightly against the filling-rack, teeth on the under surface of the table, a feeding-slide adapted to advance said tray, a rack-bar formed on the under surface of the feeding-slides, a rotating arm adapted 85 to engage said rack-bar to impart an intermittent movement to the tray, and a spring-actuated dog passing through the slides, teeth on the under surface of the table and adapted to be engaged by said dog, and means for 90 automatically releasing the dog from engagement with said teeth, and a weighted member connected to the slide for returning the slide to its starting position, as set forth.

6. A filling-machine comprising a frame, a 95 superstructure, means for imparting a vibratory movement thereto, a table, vertically-movable bars, cams for raising said bars, a hopper, an adjustable gage-receptacle, and means for reciprocating the same underneath the hop- 100 per, an apertured filling-rack, a slide mounted upon the table, adjustable lugs carried at the ends of the cross-piece of said slide, a spring-actuated dog, a tubular casing therefor, a bar or lever passing through a slot in said 105 casing, a head upon said lever, and an inclined edge on the inclined portion thereof, a stop against which said head is adapted to contact to throw the inclined edge of the lever through the slot and cause the dog to be 110 released from the teeth upon the under surface of the table, and a weighted member connected to the slide, whereby the tray may be returned to its starting position.

In testimony whereof I have hereunto 115 signed my name in the presence of two subscribing witnesses.

GEORGE W. BLAKE.

In presence of—

M. E. HARRISON,
R. R. LOWRY.